1. CHEMICAL: Common name:

MTI

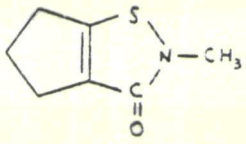
Chemical name (IUPAC):

2-methyl-4,5-trimethylene-4-isothiazolin-3-one.

Trade name(s):

Promexal

Structure:



Formulations:

Liquid.

Physical/Chemical properties:

Molecular formula: C_7H_9NOS.
Molecular weight: 155.
Physical state: Buff colored solid.
Melting point: 121-123 °C.*
Vapor pressure (20 C): 2.1×10^{-5} Torr.*
Solubility (20 C): >20% in water.*
Log K_{ow} (25 C): 0.6.*
pK_a: 5.7*

*: The validity of these values has not yet been confirmed.

2. TEST MATERIAL:

Study 1: Active ingredient.

3. STUDY/ACTION TYPE:

Review of hydrolysis study in support of registration of MTI.

4. STUDY IDENTIFICATION:

161-1: Abiotic hydrolysis
Brown, D., and R.D. Stanley. 1992. 2-methyl-4,5-trimethylene-4-isothiazolin-3-one (MTI): Determination of hydrolysis as a function of pH. Laboratory Project ID: BL4450/B. Unpublished study performed by Imperial Chemical Industries PLC, Brixham Laboratory, Devon, UK, and submitted by Zeneca, Inc., Wilmington, DE. (43138732)

5. REVIEWED BY:

David Edelstein
Soil Scientist
EFGWB/EFED/OPP
Review Section #3

Signature: David Edelstein

Date: SEP 30 1994

6. APPROVED BY:

Akiva Abramovitch
Chief
EFGWB/EFED/OPP
Review Section #3

Signature:

Date: Akiva Abramovitch
SEP 30 1994

7. CONCLUSIONS:

INDIVIDUAL STUDIES:

161-1: Hydrolysis (MRID 43138732; upgradeable)
The reviewed submission was not actually a study report, but a report summary. It is not possible to ascertain the validity of the data based upon the submission alone. For this reason, the study results must be considered uncertain. However, due to the fact that MTI is used as a biocide in aqueous mixtures, the study author's contention that MTI is stable in aqueous solutions is credible: if MTI hydrolyzed rapidly, it would not be effective. As MTI is an indoor use compound that may not be discharged to the environment without an NPDES permit, there is no urgent need for additional hydrolysis data on MTI at this time.

MTI (2-methyl-4,5-trimethylene-4-isothiazolin-3-one; purity 95%) was stable in sterile, aqueous pH 4 buffer solution that was incubated in the dark at 50.0 $\pm$ 0.2 C for 5 days. Promexal was stable in a pH 7 buffer solution and relatively stable (≈4% degraded) in a pH 9 buffer solution incubated under similar conditions.

ENVIRONMENTAL FATE ASSESSMENT:

MTI is stable to hydrolysis; this is expected, as it is used as a preservative in aqueous industrial and home products. As MTI is a biocide, it is also expected to resist biodegradation. MTI is an indoor use compound, and is not to be discharged directly to the environment.

8. RECOMMENDATIONS:

Inform the registrant that the data submitted are adequate to support registration of MTI as an industrial biocide. However, the remaining uncertainty as to the stability of MTI in water could be substantially reduced if the registrant chooses to submit a more complete report of the study methodology. No additional data is required for this use.

9. BACKGROUND:

A. Introduction

B. Directions for Use

MTI is the active ingredient of a preservative in water based industrial products. It is meant to be used in polymer latices, oil in water emulsions, emulsion paints, rinse waters, non-food contact adhesives and paper coatings, and other aqueous industrial or household chemicals. MTI represents ≤0.30% of the finished products.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

Refer to attached DER's for discussion of studies.

11. COMPLETION OF ONE-LINER:

One-liner has been completed and is attached.

12. CBI APPENDIX:

No claim of company confidentiality is made for the data reviewed in this package.